AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-34. (canceled)

35. (new) A method for the production of a biomolecular complex, said method comprising the steps of:

i) synthesis of a molecular combination of a first functional element (FE_1) and a first binding element (BE_1), BE_1 comprising a nucleotide sequence that binds to a first target molecule or area (T_1),

ii) synthesis of a molecular combination of FE_1 and a second binding element (BE_2), BE_2 comprising a nucleotide sequence that binds to a second target molecule or area (T_2),

iii) synthesis of a molecular combination of a second functional element (FE_2) and BE_1,

iv) synthesis of a molecular combination of and BE_2,

v) synthesis of a linker molecule (L) comprising a nucleic acid connecting T_1 and T_2 and having a pre-determined physical property, and

vi) reacting the linker molecule L with the molecular combination of steps i) and iv), or of steps ii) and iii), to obtain self-assembly of the molecular combination to the linker molecule L in ~~the~~ a desired configuration in solution,

to produce said biomolecular complex comprising FE_1 and FE_2, wherein each of FE_1 and FE_2 is attached to one of BE_1 and BE_2, each of BE_1 and BE_2 is attached to one of T_1 and T_2, and T_1 and T_2 are connected to each other by L (FE-BE-T_1-L-T_2-BE-FE).

36. (new) The method according to claim 35, further comprising synthesis of at least one second linker molecule (l) connecting FE_1 or FE_2 with BE_1 or BE_2, and reacting the second linker molecule l in step vi) to produce the biomolecular complex wherein FE_1 or FE_2 are attached to BE_1 or BE_2 through the second linker molecule l (FE-l-BE).

37. (new) The method according to claim 36, wherein the second linker molecule l is a nucleic acid polymer having a pre-determined physical property.

38. (new) The method according to claim 35, further comprising repeating steps i) - iv) for functional elements other than FE_1 and FE_2, and binding elements other than BE_1 and BE_2, and forming separate stock solutions of the molecular combinations of steps i) - iv), and wherein in step vi) L is reacted with the molecular combinations from the stock solutions.

39. (new) A method for the production of a biomolecular complex, said method comprising:

(a) providing separate solutions of first functional elements (FE_1), each FE_1 adapted to specifically attach to a first binding element (BE_1), and BE_1 adapted to specifically attach to a first target molecule or area (T_1),

(b) providing separate solutions of second functional elements (FE_2), each FE_2 adapted to specifically attach to a second binding element (BE_2), and BE_2 adapted to specifically attach to a second target molecule or area (T_2),

(c) providing separate solutions of said binding elements BE_1 and BE_2, each binding element comprising a nucleotide sequence,

(d) providing separate solutions of linker molecules (L), each linker molecule comprising a nucleic acid molecule having a distinct physical property,

(e) reacting FE_1 of step (a) with at least one of BE_1 and BE_2 of step (c) to form a first functional element/binding element combination (FE_1-BE),

(f) reacting FE_2 of step (b) with at least one of BE_1 and BE_2 of step (c), other than the binding element used in step (e), to form a second functional element/binding element combination (FE_2-BE),

(g) optionally, separately repeating steps (e) and (f) for each of said first functional elements and said second functional elements,

(h) reacting each linker molecule L from step (d) with T_1 and T_2, each of T_1 and T_2 comprising a target sequence capable of specific binding to BE_1 and BE_2 of steps (e) and (f),

(i) reacting FE_1-BE and FE_2-BE of steps (e) and (f) with each linker molecule L reacted with T_1 and T_2 of step (h) to form a combination of functional elements attached to binding elements and target molecules (FE_1-BE-T_1-L-T_2-BE-FE_2), and

(j) repeating steps (h) and (i) in order to form a library of combinations of functional elements attached to binding elements and target molecules (FE-BE-T-L-T-BE-FE),

to produce said biomolecular complex comprising FE_1 and FE_2, wherein:

FE_1 is specifically attached to a binding element, and the binding element is specifically attached to T_1,

FE_2 is specifically attached to a binding element, and the binding element is specifically attached to T_2, and

T_1 and T_2 are attached by at least one linker molecule (L).

40. (new) The method according to claim 39, wherein L further comprises a marker or label chosen among a reporter gene, a radioactive label, and a fluorescent label.

41. (new) The method according to claim 39, wherein at least one of BE_1 and BE_2 comprise peptide nucleic acids (PNA) sequences.

42. (new) The method according to claim 39, wherein FE_1 and FE_2 are chosen among a natural or synthetic peptide, a lipid, a glycoprotein, a receptor ligand, and a fraction thereof, or any combination thereof.

43. (new) The method according to claim 39, wherein in at least one of steps e) and f) at least one of FE_1 and FE_2 is attached to BE_1 or BE_2 through a second linker molecule (l).

44. (new) The method according to claim 43, wherein the second linker molecule l is a nucleic acid polymer having a predetermined physical property.